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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,515	03/25/2004	Yukio Hanamoto	2185-0722PUS1	5551
2292	7590	06/01/2005	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			LEE, SIN J	
			ART UNIT	PAPER NUMBER

1752

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/808,515

Applicant(s)

HANAMOTO ET AL.

Examiner

Sin J. Lee

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7-12-04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 9, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al (US 2001/0016298 A1) in view of Trefonas, III et al (5,350,714) and Nishi et al (5,759,736).

In Example 1 (see [0115], [0122], and [0104]-[0105]), Nakanishi teaches a chemically amplified positive resist composition comprising Resin A-1, a photoacid generator, 2-,6-diisopropylaniline (a quencher), and a solvent. The Resin A-1 is a copolymer of 2-methyl-2-adamantyl methacrylate/3-hydroxy-1-adamantyl methacrylate/ $\beta$ -methacryloyloxy- $\gamma$ -butyrolactone. Nakanishi does not teach that his resin is treated with activated carbon.

Trefonas states (col.1, lines 29-33) that the removal of contaminants from processing fluids used for the production of integrated circuits before or during use is basic insurance for prevention of damage to the integrated circuit, and the reference teaches (see col.3, lines 56-68, col.4, lines 1-16, and Example 1) a process of removing contaminants from photoresist composition solutions by using a module containing activated carbon. Also, as evidenced by Nishi et al (col.7, lines 33-42), it is known in the art that when purifying a photoresist composition, either the respective

constituting components are respectively purified by e.g., an ion exchange method and then mixed to produce the photoresist composition, or the respective constituting components are mixed to form a photoresist composition, which is then purified by e.g., an ion exchange method before use. Based on the teaching of Trefonas and Nishi, it would have been obvious to one of ordinary skill in the art to purify the respective constituting components of Nakanishi's resist composition by using a module containing activated carbon and then mix those purified components to produce the resist composition in order to prevent any damage to the integrated circuit, which is to be formed by using Nakanishi's resist composition. Therefore, Nakanishi in view of Trefonas and Nishi would render obvious present inventions of claims 1-5, 7, 9, and 13-16 (it is the Examiner's position that the chemical amplification resist composition of Nakanishi which is produced by the method taught by Trefonas in view of Nishi would inherently possess present clogging degree range of claim 14).

With respect to present claim 6, Nakanishi teaches the equivalence of the 2-methyl-2-adamantyl group (as in the monomer unit of 2-methyl-2-adamantyl methacrylate of his Resin A-1) and tetrahydro-2-pyranyl group as acid labile groups (see [0020]). Therefore, it would have been obvious to one of ordinary skill in the art to use the monomer unit of tetrahydro-2-pyranyl methacrylate instead of the monomer unit of 2-methyl-2-adamantyl methacrylate in Nakanishi's Resin A-1. Therefore, Nakanishi in view of Trefonas and Nishi would render obvious present invention of claim 6.

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al (US 2001/0016298 A1) in view of Trefonas, III et al (5,350,714) and Nishi et al

(5,759,736) as applied to claim 1 above, and further in view of Uetani et al (US 6,548,220 B2).

Nakanishi in view of Trefonas and Nishi do not teach present repeating unit of claim 8. Uetani teaches that a resin containing the polymerization unit of 2-norbornene exhibits an excellent dry etching resistance characteristic (see col.28, lines 4-7). Since Nakanishi teaches (see ([0028]-[0029]) that his resin can contain optional monomer units, it would have been obvious to one of ordinary skill in the art to add the monomer unit of 2-norbornene into Nakanishi's Resin A-1 in order to obtain excellent dry etching resistance characteristic as taught by Uetani. Therefore, Nakanishi in view of Trefonas, and Nishi, and further in view of Uetani would render obvious present invention of claim 8.

4. Claims 1-4, 10-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Urano et al (US 6,656,660 B1) in view of Trefonas, III et al (5,350,714) and Nishi et al (5,759,736).

In Example 4 (see Table 2), Urano teaches a positive resist composition comprising poly(p-1-ethoxyethoxystyrene/*p*-hydroxystyrene/*p*-*tert*-butoxycarbonyloxystyrene), poly(p-1-ethoxy-n-propoxystyrene/*p*-hydroxystyrene/*p*-*tert*-butoxystyrene) a photoacid generator, and a solvent. Urano does not teach that his resin is treated with activated carbon.

Trefonas states (col.1, lines 29-33) that the removal of contaminants from processing fluids used for the production of integrated circuits before or during use is basic insurance for prevention of damage to the integrated circuit, and the reference

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teaches (see col.3, lines 56-68, col.4, lines 1-16, and Example 1) a process of removing contaminants from photoresist composition solutions by using a module containing activated carbon. Also, as evidenced by Nishi et al (col.7, lines 33-42), it is known in the art that when purifying a photoresist composition, either the respective constituting components are respectively purified by e.g., an ion exchange method and then mixed to produce the photoresist composition, or the respective constituting components are mixed to form a photoresist composition, which is then purified by e.g., an ion exchange method before use. Based on the teaching of Trefonas and Nishi, it would have been obvious to one of ordinary skill in the art to purify the respective constituting components of Urano's resist composition by using a module containing activated carbon and then mix those purified components to produce the resist composition in order to prevent any damage to the integrated circuit, which is to be formed by using Urano's resist composition. Therefore, Urano in view of Trefonas and Nishi would render obvious present inventions of claims 1-3, 10-12, 14, 15, and 17 (it is the Examiner's position that the resist composition of Urano which is produced by the method taught by Trefonas in view of Nishi would inherently possess present clogging degree range of claim 14).

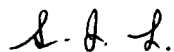
With respect to present claim 4, Urano's poly(p-1-ethoxy-n-propoxystyrene/p-hydroxystyrene/*p-tert-butoxystyrrene*) has 10 mol% of p-tert-butoxystyrene unit (see Production Example 6). Thus, Urano in view of Trefonas and Nishi would render obvious present invention of claim 4.

Urano also teaches the use of a basic compound (such as triethylamine) in his composition. Thus, Urano in view of Trefonas and Nishi would render obvious present invention of claim 13.

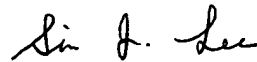
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee  
May 30, 2005



**SIN LEE**  
**PRIMARY EXAMINER**